

EyePhone™ HRX

VPL



Key Features

- State-of-the-Art 275 DPI Color LCDs
- Wide Angle FMT Optics
- RS-170A RGB & NTSC Video Signal Capability
- Formfitting Head-Mounted Display System
- Studio-Quality Audio Headphones
- Screen-Saver Signal Detector
- Optional Head Tracking in Six Degrees of Freedom

Description

The EyePhone™ HRX is a color stereo display system worn on the head of the user. The stereo image is displayed through wide angle optics by two color liquid crystal (LCD) screens (one for each eye). Each of the LCDs contains about 350,000 color pixel elements. The EyePhone HRX is opaque: only the image displayed by the system is visible, not the surrounding physical environment.

A new, light plastic headmount incorporates stereo headphones.

The EyePhone HRX can also be configured with a Spatial Tracking System using a Polhemus 3Space® Tracker to measure in real-time the head's position and orientation.

The EyePhone HRX was developed for use in virtual reality. VPL's RB2™ Virtual Reality System uses head tracking information to render real-time stereo images for each of the EyePhone HRX displays.

Key Features

State-of-the-Art 275 DPI Color LCDs

The EyePhone HRX provides a new class of high resolution head-mounted display systems. Two separate high density color LCD displays contain four times the number of pixels as found in the industry standard VPL EyePhone Model 2.

Wide Angle FMT Optics

The EyePhone HRX utilizes FMT Optics developed by VPL to display a wide, 106° field of view. The FMT Optics feature Fresnel lenses that are lighter and offer less geometric distortion than previous optics. A proprietary diffusion element reduces the apparent granularity of the LCD displays.

RS-170A RGB & NTSC Video Signal Capability

The EyePhone HRX accepts RS-170A RGB video signals for the highest quality image. Optionally, the EyePhone HRX is available in convenient NTSC video signal format.

Formfitting Head-Mounted Display System

A new headmount's stability, balance, and snug fit give the EyePhone HRX a new level of ease of use, comfort, and low-facial contact.

Studio-Quality Audio Headphones

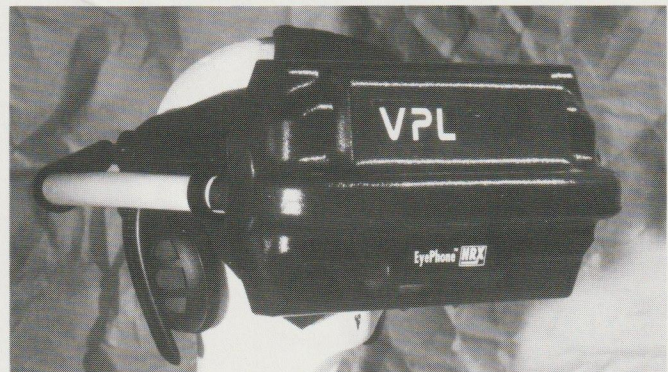
The EyePhone provides a comfortable pair of studio-quality headphones for audio virtual reality applications such as VPL's AudioSphere™.

Screen-Saver Signal Detector

The EyePhone HRX Control Unit includes signal detector electronics that protect the integrity and extend the life of the LCD elements.

Optional Head Tracking in Six Degrees of Freedom

A VPL Spatial Tracking System™ (STS) using a Polhemus 3Space® Tracker



measures head motion in 6 degrees of freedom. Using magnetic detection with high precision 10-bit a/d translation, the STS determines the head's position (X, Y, and Z) and orientation (Yaw, Pitch, and Roll). The STS supports interfaces to any host computer with RS-232 or RS-422 serial communication links.

Specifications

Weight

Goggles & Headmount: 2.5 lbs

Field of View

Horizontal - Per Eye: 86°

Horizontal - Both Eyes: 106°

Vertical: 75°

Resolution per Eye

345,600 Pixels (primary colored pixels)

LCD Matrix

720 x 480 Matrix

Display Technology

Active Matrix TFT Technology with
<100 Micron elements

Video Inputs

Left and Right RGB and Sync RS-170A
(NTSC Timing) Video Inputs or factory
selectable for NTSC Composite Inputs

User Controls

Adjustable flicker, brightness and
contrast for left and right displays

Operating Temperature

10° C to 30° C at relative humidity of
10% to 80% noncondensing (Note: User
comfort should be considered in
planning operating temperature ranges)

Power Requirements

110 VAC, 50-60 Hz, 50 Watts

Line Fuse

2A, 250V Slow Blow

Position Tracking Option

Accuracy

Position: 0.1 inches RMS (to 72 inches)

Attitude: 0.5 degrees RMS (to 72 inches)

Data Communications interface

RS-232 & RS-422 (user selectable from
300 to 19,200 baud)

Data Transfer Rate

30/sec, 60/sec

Data Acquisition Rate

60 times per second

Operating Environment

The six degree of free tracking system
should not be used in the presence of
metallic objects or strong electromag-
netic fields.



VPL Research Inc.

656 Bair Island Rd.

Third Floor

Redwood City, CA 94063

(415) 361-1710 (phone)

(415) 306-1150 (phone)

(415) 361-1845 (fax)

VPL, RB2, EyePhone, AudioSphere, and
Spatial Tracking System are trademarks of
VPL Research Inc. 3Space® is a registered
trademark of Polhemus. Specifications
subject to change without notice.

Copyright ©1991 VPL Research Inc.
Domestic Version